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Medical Education
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About the author.....

Dr. Shiv Chandra Mathur is a public health specialist. After graduating in Medicine, he earned MD in Preventive and Social Medicine. He holds post-gradute diploma in Journalism; Rural Development; and U.N. & International Understanding from the well recognized institutes in India. He has done a three phase course on Sexual and Reproductive health and Rights from Uppsala University, and a public health training from Karolinska University, Sweden.

Working in the discipline of Preventive and Social Medicine for over two decades in the Medical Colleges of Rajasthan, Dr. Shiv Chandra has not merely taught public health to medical undergraduates and postgraduates, but remained consistently involved in number of research studies on the functioning of health care delivery within the public system. His in-depth enquires in the conduct of maternal and child health programmes and medical/nursing education has substantially added to the organisational development of health and family welfare set-up in the state of Rajasthan. His writings on primary health care brought him merit award from Government of India in 1997.

Prof. Shiv Chandra Mathur evinces keen interest on issues related to health care and human resource development. He is consistently striving to make both of them cost-effective within the rubric of sustainable public systems, economy of scale and humanistic perspectives. He led the Health Management Training and Research wing (UNFPA supported) at HCMRIPA during 1994-95. Subsequently he joined SIHFW, Rajasthan where he is holding position of Director since June 2002.

It is on the request of National Commission on Macroeconomics and Health working under MHFW, Govt. of India, that a paper on medical education was prepared. It reviews the status of allopathic medical education in India over last hundred years, the recent trend of creating Health Universities, the current status of Doctors working in public systems, and what needs to be done to make them effective. The same has been dilated in the context of Rajasthan for this series of technical reports from SIHFW. The present paper needs attention of one and all in the department of Medical Education and newly coming up Health University in the State of Rajasthan.

Editor

Introduction

1. In ancient India, the focus of health care was mainly on treatment of diseases based on Indigenous Systems of Medicine, mainly Ayurveda. Modern System of Medicine, introduced in India during nineteenth century, developed rapidly in twentieth century particularly after Independence. Over the past fifty years, the Central and State Governments have invested earnestly in developing health services on the lines of modern allopathic medicine. Eventually a health care delivery system has been developed through complementing and supplementing hospitals and dispensaries with Community Health Centres, Primary Health Centres, health subcentres and community based national health programs.

2. The overall goal of mankind is human development, which could be conceived as a combination of health development and socioeconomic development. Thus, the medical education system of any country should aim to produce skilled manpower that is able to contribute to health development of the community as also to that of the country. Therefore, medical education cannot be considered in isolation but in congruence with the needs of the country (and also different regions within the country). The output of the medical education system (as also paramedical education system) becomes the input for the health care delivery system, thereby necessitating an interface between these two systems. This ought to be a dynamic process wherein the planning, production, recruitment and retention of health manpower is guided by the requirements of health care delivery system based on the needs of the community. Almost three-fourths of Indian population lives in rural areas and primary health care is the mainstay of delivery of health services in remote areas. Primary health care is delivered through Primary Health Centers and the delivery of preventive, promotive and curative services through PHCs remains dependent largely on allopathic doctors who more often than not perceive their role essentially as providers of curative services.

3. Medical education imparted in the country, particularly at undergraduate level, has remained heavily hospital oriented and has always attempted to produce competent clinicians with emphasis on curative care, keeping pace with developments in the rest of the world. Most medical teachers fail to realize that the doctors being produced through undergraduate medical education are at the hub of the delivery of preventive and promotive health services along with curative services to be delivered in a primary health care set up. The government invests heavily on medical education with the assumption that the trained doctors available would largely fulfill the needs of public system – a system which has a large network of facilities scattered in the countryside of about six hundred districts in India. But what is usually observed in the frontline of public system is a medical graduate in a dilemma of playing his / her role as a physician or as a manager who is expected to take care of health of the community through the primary health care system.

There is, therefore, a mismatch between the kind of trained / skilled manpower required by the delivery system and that produced by the medical education system. This has adversely affected health outcomes of the community especially in rural areas where people are deprived even of primary health care services.

Developments in the field of Medical Education and Manpower in India

4. The first medical school to train doctors was established in Calcutta in 1822 followed by Bombay (1826) and Madras (1827). In 1833, William Bentinck appointed a committee to work out the principles on which Medical Education was to be established in India. The committee in turn established that medical science to be taught in India would be in strict accordance with the mode adopted in Europe. Over the next hundred years Medical Colleges were established in the main centres of British India provinces. All these colleges worked under the strict supervision of General Medical Council of England.

5. In 1933, Medical Council of India was established by promulgating an Act to provide uniform and improved standards of medical education in India. Concurrently many provincial governments started schools to train students for the degree of *Licentiate Medical Practitioners*. It was a 3-4 years course, often in vernacular, and the training was geared to general practice in small towns and rural areas.

6. In the early sixties activists in medical education set up the Indian Association for Advancement of Medical Education (IAAME) as an independent forum for exchange of views by medical teachers. IAAME has organized a number of seminars and workshops to improve the quality of medical education. In the late sixties a Medical Education Committee was appointed by the Government, which suggested the changes in curriculum in order to produce basic doctors.

7. In 1981, a joint study group constituted by ICSSR and ICMR outlined an alternative strategy for Health For All in India. In the context of medical education this strategy stressed the need for training in cultural / social aspects of medical action / purposes. The group laid emphasis on the concept of the health team, practical field-oriented training in epidemiology, health education and management of health services, and of a course integrating allopathic and other systems of Indian Medicine.

8. The Independent Commission on Health (ICH) set up in mid-nineties by the Voluntary Health Association of India (VHAI) to critically diagnose the maladies affecting various arms of health services of the country criticized the privatization of medical education. ICH's activism highlighted the issue of capitation fee in Medical Colleges which made the judiciary declare capitation fee as unconstitutional, unreasonable, unfair and violative of the

right to education. The judiciary also observed that MCI was not playing the role of a regulatory body. The ICH went on observing that MCI inspectors have not been able to maintain the high ethics expected of them to ensure the enforcement and maintenance of standards.

9. Besides, Government of India established a number of committees from time to time for improvement in health services, as also addressing the needs of health manpower. The major recommendations of the committees are summarised below:

S. No.	Name of Committee	Major recommendations of relevance to medical education
1.	Health Survey and Development Committee, 1946 (Bhore Committee)	1. Health services should be placed as close as possible to the people in order to ensure the maximum benefit to the communities to be served. 2. Doctor: population ratio of 1: 2000 to be achieved by 1971. 3. The "basic" doctor should receive adequate training in the community and preventive aspects of medicine. 4. The establishment of a Department of Preventive and Social Medicine in every medical college to give the student an insight into social health problems by contacts with home and community life.
2.	Health Survey and Planning Committee, 1961 (Mudaliar Committee)	1. Norm of one medical college for 50 lakhs population. 2. Compulsory pre-registration internship with three months rural posting in the field practice area of PSM Departments. 3. Linkage between practitioners of ayurveda and the modern system of medicine may be tried, by offering to practitioners of ayurveda a specific course of training for 2-3 years so that after training their services can be utilised for health care. 4. Central Government should give grants for undergraduate and postgraduate medical education, on the analogy of grants being given by the UGC for postgraduate technological education. 5. Too much emphasis on specialities should not be given in undergraduate course, this being reserved for the postgraduate stage and the housemanship stage.

		6. In regard to orientation in rural health, the system of having certain days of the week when students are taken to villages along with the teachers will be of some benefit. Visits to slums in urban areas should also be included. 7. Training of licentiates and short-term medical courses should not be started; training of several categories of paramedical personnel would meet the problem of filling up the gap in medical manpower requirements.
3.	Group on Medical Education and Support Manpower, 1975 (Srivastava Committee)	1. Stop an increase in number of medical col leges and admissions and make attempts to reduce the number of admissions to the exist ing medical colleges so that the teacher-student ratio and quality of education improve. 2. Combine the good features of modern system of medicine (which employs only the fully trained technically competent persons on a professional basis) and the emotional, psychological and social advantages of the traditional system. The quality of life and of the health services will improve through the introduction of suitably trained part-time para-professional persons working on a self-employment basis. 3. Create a new cadre of Health Assistants (M) & (F). 4. There is a need to train physicians in whom an interest is generated to work in the community and who have the qualities for function ing in the community in an effective manner. 5. Set up a Medical and Health Education Commission for coordination and maintenance of standards in health and medical education. It should be broadly patterned after the UGC with a whole-time Chairman.
4.	Medical Education and Review Committee, 1981 (Mehta Committee)	1. It was necessary to initiate action, on a time bound basis, to arrive at a reliable ssessment of the available stock of health manpower, encompassing health functionaries of all kinds belonging to various systems of medicine, actually active in practice.

		2. State Governments should provide adequate funds to ensure that interns & doctors posted at rural health centres are provided with suitable accommodation and other conveniences to enable them to discharge their responsibilities effectively and efficiently. 3. Ensure that primary health centres, rural training centres, etc. are adequately equipped and provided with the requisite supply of drugs. 4. Medical Council of India would require to constantly inspect and review the functioning of medical institutions and take an uncompromising view regarding recognition.
5.	Health Manpower Planning Production and Management Committee, 1987 (Bajaj Committee)	1. There has to be a proper balancing between planning, production and management dimensions of health manpower development keeping in view the health needs. 2. Planning and production of allied health professionals needs to be given due attention. Various vocational courses should be started. 3. There should be an integration of Indigenous Systems of Medicine with the Modern Systems of Medicine in the preventive and promotive aspects of health care.

Doctors in the State Health Care Delivery System

10. Health services through the public sector are delivered through a network of subcentres (manned by Health Worker(s)) and Primary Health Centres (with Medical Officer as Incharge of a team) as part of primary health care. These institutions are supported by Community Health Centers and District Hospitals at secondary level and complemented by Medical College Hospitals at tertiary level. A general duty doctor (designated as Medical Officer) is at the hub of the primary health care through which services are being rendered to the rural masses. Eventually all critiquing of medical and health care services are commonly focused on Medical Officers.

The National Health Policy (1983) emphasized that the effective delivery of health care services depended very largely on the nature of education, training and appropriate orientation towards community health of all categories of medical and health personnel and their capacity to function as an integrated team, each of its members performing within a coordinated action programme.

Keeping in view the recommendations of different committees highlighting the need for a community orientation of undergraduate medical education,

Re-Orientation of Medical Education (ROME) Programme was ambitiously launched in 1977 as a revolutionary step for preparing doctors who could contribute effectively to the improvement of community health. It was envisaged that all the clinical departments of Medical Colleges would move out of the hospital setting and demonstrate the delivery of medical care to students in a community setting. To support this programme each Medical College was assigned three rural development blocks where buildings and hostels were constructed to provide teaching complexes. Each Medical College was also supplied three mobile clinics which became the symbol / mascot of the entire programme. It was a very well conceived program with political will but prior to its actual implementation it went in oblivion.

11. While about three-fourths of Indian population lives in rural areas, a majority of doctors who graduate from the medical colleges are not motivated towards public health / primary health care and opt for specialization and / or urban practice. Rural, tribal and hilly areas are underserved while urban areas have an excess.

12. Ministry of Health and Family Welfare, Government of India first described the roles of Medical Officers in the document 'Job Responsibilities of Staff of the Primary Health Centers' published in 1986. Many State governments, taking clue from this document, have issued their own guidelines to general duty doctors of their respective states. Concurrently several health related projects funded by donor agencies from outside triggered the concerned program managers to lucidly illustrate the role of medical officers in different programs. A summary of the duties of MOs at PHCs as defined in the document from Government of India is placed at Annexure A. Advances in the field of medicine and public health have been quite rapid over the years; in such a situation, it is of utmost importance that the doctors keep themselves updated with the latest progress so that they can effectively contribute to the health of the populations. However, as of today, once a person is registered as a medical graduate, he / she only needs to get herself re-registered with the Medical Council of India at intervals of ten years without fulfilling any other requirement. In this era of rapid advances, this seems to be absurd and there is a necessity to introduce some pre-conditions for the re-registration of degree. This could be in the form of specified hours of Continuing Medical Education.

13. Today the kind of services provided by doctors is affected by several factors. One such factor is Consumer Protection Act (COPRA) and public litigations against medical / health care providers. While there is some training in Anesthesia imparted to undergraduate students during their MBBS course and during internship, doctors who have even undergone an additional training in Anesthesia for three months are not considered skilled enough to administer anesthesia and are liable to be taken to Court and criminal proceedings initiated against them. Therefore many doctors hesitate to provide care in an emergency case for fear of being dragged to court. This is

in contrast to Nurses (Certified Registered Nurse Anesthetists) providing Anesthesia in other countries like the United States. This is not only the case of graduate Medical Officers but also with Specialists in some cases - instances of non-operating surgeons (Gynecologists / Surgeons / Ophthalmologists) have occasionally come to notice who are not performing any surgery. In some instances this is due to non-availability of Anesthetists.

Availability and training of doctors

14. The generally agreed norm followed for planning and production of doctors in India is the one suggested by Mudaliar Committee of one doctor for every 3,000 population (1:3,000). Till 30 September 2004, 6,23,826 doctors had been registered with different State Medical Councils in India (Annexure B); this gives a doctor population ratio of one doctor for every 1,745 population (or 57.3 physicians for 100000 population). In comparison, the number of physicians per lakh population in Australia, Canada, United Kingdom, the United States and Sri Lanka was 240, 229, 164, 279 and 36.5 respectively. In addition, as regards the mix of health manpower, each of these countries has a nurse: doctor ratio of 3:1 compared to only about 1:1 in India (Annexure C).

15. At the same time, it needs to be noted that the Medical Council of India and State Medical Councils do not maintain a live register - updated figures taking into account attrition due to death, migration outside country, or attrition due to non-practising of medicine by qualified doctors are not available with these councils. Various committees set up by the Government from time to time have recommended that updated number of health manpower should be available in the country so that further planning and production of health manpower could be done accordingly.

16. Moreover, it is difficult to comprehend the exact number of these qualified doctors who work for public system on full time basis because of two reasons: one reason is that a fair number of doctors work under Ministry of Defence, Railways, Labor, Posts and Telegraph along with a reasonable number in a variety of public sector units (where they have to play an effective role in delivery of primary health care). Information on the exact number of doctors working with State Health Departments is also not often available. The Annual Report (2002-2003) of Ministry of Health and Family Welfare - Central Bureau of Health Intelligence shows the number of allopathic doctors in government agencies. The report mentions that the States of Bihar, Chattisagarh, Gujarat, Jharkhand, Madhya Pradesh, Uttaranchal and West Bengal had not furnished information on this account. Nevertheless the data on population served per Doctor is shown which ranges form one doctor per 661 population in Chandigarh to one doctor per 64182; population for Andhra Pradesh; there is a doctor for 11714 in Karataka; 21617 in Tamil Nadu; 11252 in Rajasthan; 25153 in Uttar Pradesh and 16158 in Delhi.

State	Date	No. of Doctors	Population Served per doctor
Uttar Pradesh	1.1.2000	6,766	25,153
Rajasthan	1.1.2001	5,019	11,252
Punjab	3.1.2001	3,657	6,642
J & K	1.1.2000	2,514	3,956
Data from MP, Bihar, H.P. and Haryana not furnished			
Andhra	1.1.1992	1,059	64,182
Karnataka	1.1.2000	4,447	11,714
Tamil Nadu	1.1.2000	2,855	21,637
Orissa	1.1.2000	4,904	7,312
Data from West Bangal and Maharasthra not furnished			
Chandigarh	1.1.2002	1,414	661
Goa	1.1.2002	223	7,507
Delhi	1.1.2001	835	16,158
Pondicherry	1.1.2001	606	1,607

The doctor-population ratios are further skewed because of lack of motivation of majority graduate doctors towards public health / primary health care. Rural, tribal and hilly areas are underserved while urban areas have an excess.

Despite the shortcomings of a live register not being maintained, it appears that the number of doctors (currently trained in 229 Medical Colleges), while taking into account the pass percentage as well, is adequate for delivering health services to the masses effectively and efficiently. Mudaliar Committee had recommended establishing one Medical College for a population of 50 lakhs (which comes to 218 Medical Colleges taking into consideration today's population). As of July 2004, there are 229 Medical Colleges in the country out of which 125 are in government sector and remaining 104 in private sector (Annexure D & E). The admission capacity in these colleges is 25,500 students per year. Out of these 229 medical colleges, 67 colleges have been permitted by the Central Government under section 10 A of the MCI Act and they are yet to be recognized. The recognition of the college is considered at the time when first batch admitted in the college appears for the first final year examination. There is wide State-wise disparity (north-south divide) in the number of Medical Colleges. While the number of colleges in Maharashtra is 38, Karnataka 31, Andhra Pradesh 27 and Tamil Nadu 20, their number in Rajasthan, UP, MP and Orissa is 8,12,7 and 3 respectively. Broadly there are 7700 undergraduate seats in north in comparison to 18,000 UG seats in south India.

17. The National Health Policy 2002 has prescribed the urgent introduction of statutory norms for deployment of doctors and nurses and has gone to the point of expecting the systems to progressively review and make the norms more stringent as the medical institutions improve their capacity for meeting better normative standards.

18. It is mandatory for all doctors to get their basic degree (MBBS) registered with the Medical Council and to renew it every ten years. But, after completion of

initial ten years of registration, quite a few doctors delay their re-registration out of sheer ignorance. As might be evident from the above, and as has been recommended by earlier committees, in this rapidly changing scenario there is an urgent need to know how many doctors (whether graduates or undergraduates) are currently available within the country. This could be ensured by a head count to begin with followed by maintenance of live registers and also keeping a track on doctors who migrate out of the country.

Integration with Indigenous Systems of Medicine

19. Ayurveda, Unani, Siddha and Homeopathy are the four broadly recognized Indian Systems. Successive committees set up by the Government from time to time have highlighted the competitive advantage of doctors of Indigenous Systems of Medicine due to their easy accessibility and acceptability to the general masses especially in the rural areas. The National Policy of Indian System of Medicine and Homeopathy (ISM&H) released by the Ministry of Health and Family Welfare, Government of India in 2002 underlined the need to 'integrate ISM&H in health care delivery system and national programmes and ensure optimal use of the vast infrastructure of hospitals, dispensaries and physicians.

There were 6,91,470 AYUSH (Ayurveda, Yoga, Unani, Siddha and Homoeopathy) doctors registered practitioners in India as on 1.1.2002 (Annexure F). If these are added to the number of doctors registered under allopathic systems of medicine, the total number of doctors registered in India becomes 13,15,296 giving a doctor population ratio of one doctor for every 827 population. There are 439 ISM&H colleges including those of Yoga and Naturopathy with an admission capacity of 23,555.

As a first step towards functional integration of health care delivery system, clinics of Ayurveda, Unani and Homoeopathy have been set up by the Central Government at some allopathic hospitals and dispensaries. Under the RCH Programme, seven Ayurveda and five Unani medicines were included and as a pilot project their distribution was done in nine States and four cities. However, in the absence of proper orientation of the health personnel on use of these medicines, these medicines could not be effectively utilised. Unfortunately, such attempts at integration would not yield the desired results in the absence of a proper orientation. The need, therefore, is to develop functional linkages with Indigenous Systems of Medicine at all levels - at the level of training, service delivery and research. As an interim measure, instead of talking of integration, coordination between the service providers under modern systems of medicine and those under ISM&H could be attempted, as has been done by the Central Government by setting up clinics of Ayurveda, Unani and Homoeopathy at some allopathic hospitals and dispensaries.

20. There is a need to strike a balance in the delivery of two types of care by adopting a two pronged strategy by (i) modifying or re-enact laws governing the practice of modern medicine by ISM practitioners so that there is clarity of the subject

on one hand and (ii) assist the speciality hospitals of allopathy who wish to establish *Panchkarma* and *Ksharsutral* facilities for the treatment of neurological disorders, musculoskeletal problems, fistula-in-ano, bronchial asthma and dermatological problems.

Medical Teachers

21. It is well known that no technology can substitute a good teacher for transfer of skills to a student / trainee. This is equally relevant for medical education. One of the major challenges in managing medical education is to induct and sustain competent medical teachers. A person might be a good doctor but not necessarily a good teacher and vice versa. There is a need to recruit full time good teachers who can transfer their expertise to their students. However, the current system of recruitment is such in which only the technical knowledge of the person is assessed without taking into consideration the person's aptitude for training.

22. The development and training of the faculty of Medical Colleges has been a greatly neglected area in spite of all the rhetoric about 'standards' and guidelines drawn up for their numbers, qualifications and selections. Medical Council of India (MCI) in its guidelines on Regulations on Graduate Medical Education, 1997 has stipulated the number of indoor beds, residents and medical teachers on the basis of annual number of admission seats. With a rapid increase in the number of Medical Colleges, an acute shortage of medical teachers, especially in some pre- and Para clinical specialties, has been felt. It is not only private colleges who have dearth of teachers but even the government owned institutions suffer from it. The situation is so grim that often State Governments have to resort to a mass reshuffle of teachers of different specialties from one Medical College to another on temporary basis at the time of inspection by the team from MCI.

23. Keeping fake roll of medical teachers and showing expenditure in the salary head of medical teachers is a common business trick adopted by the managements of private medical colleges. There is ample evidence to indicate this - information available from the MCI indicates clearly that in many Medical Colleges inspected through Inspectors of MCI in the past years many faculty members had joined as a faculty in the inspected college within six months prior to the inspection. In some cases, some faculty members had joined just a day prior to the inspection. Now, MCI insists on a declaration by the faculty member about his date of appointment and date of joining in the concerned medical college besides other information.

However, the amazing truth is that MCI can only recommend de-recognition of a particular college for MBBS course and has recommended de-recognition in a few cases, but in the prevailing socio-political environment, literally no Medical College has so far been de-recognized on account of the deficiencies reported.

Based on the number of Medical Colleges, the number of sanctioned annual admission seats and the *"Minimum Standard Requirements for Medical College - For 50 / 100 / 150 Admissions Annually"* the estimated minimum number of teaching faculty required in different specialties is indicated in Annexure G. Taking an average length of service of 30 years, the estimated number of new teaching faculty required annually has also been indicated. Whether these many teaching faculty would be produced every year cannot be commented upon as the MCI does no have complete information on the number of approved number of postgraduate sanctioned in individual colleges. Moreover, the annual requirement of teaching faculty has been worked out taking an average length of service of 30 years, while it has been observed of late that many teaching faculty leave government service and move to the private sector within the country or emigrate to other countries.

As a case study, the number of teaching faculty required for undergraduate training in six Medical Colleges in public sector in Rajasthan and the sanctioned annual number of postgraduate admission seats in the State have been shown in Annexure H. At a glance it appears that there is a shortage of specialists in pre-clinical subjects like Anatomy, Physiology, Biochemistry and Pharmacology. However, it may be noted that M. Sc. Courses are also conducted in these specialities, which are not indicated in the table. While interpreting this table, it also needs to be kept in mind that the interpretation is based on the assumption that all seats are filled and that all students go on to complete their postgraduate training course. However, experience shows that many posts, especially those in the pre- and para-clinical subjects are not filled and even if filled, they are filled for a short duration and the students who opt for post-graduation in these subjects leave the specialty to join some other clinical speciality.

While interpreting the data in the table, it has also to be kept in mind that the students passing out their post-graduation could serve as teachers in Medical Colleges, serve in public health care delivery system, serve in a private setting or could even migrate out of the country. The number of postgraduate seats in different specialties in various medical colleges should be worked out in relation to the health needs of the community. The country is witnessing a period of demographic and epidemiological transition wherein we have an ageing population with an increasing proportion of people over 60 years of age, combined with a relatively high birth rate, which is slowly declining. Infant, child and maternal mortality are relatively high and have been stagnant over the past decade. We still have a large number of cases of different communicable diseases (like TB, malaria, etc.) and non-communicable diseases (like diabetes, hypertension, psychiatric illnesses, other heart diseases, etc.) are also increasing with changing lifestyles and changing environment. Recent evidence suggests that despite enormous efforts maternal mortality failed to decline because maternal deaths are because of complications (about 5 to 15% pregnant women may develop complications during pregnancy or at the time of delivery) and antenatal care can neither predict nor treat complications. At such times the mother has to have access to emergency obstetric care and in about 5% cases a

Caesarean Section operation might be required. For a Caesarean Section operation, an anesthetist is required to be available and we have shortage of anesthetists.

Planning and production of health manpower, therefore, needs to be done keeping in mind this changing scenario. A few specialities need specific mention over here because of recent developments in the field of medicine. There is a need to increase the number of post-graduate seats of anesthetists who are in short supply. Feeling the urgent need of qualified anesthetists and at the same time realising that there is an absolute shortage of anesthetists, especially in remote areas, Government of India has embarked upon an initiative of 5½ months' training of Medical Officers for Anesthesia for Emergency Obstetric Care. This can at best serve as a temporary measure but there is a need to increase the number of postgraduate seats in anesthesia.

Similarly, there has been a multiplicity of programmes and interventions introduced in the country over the years; managing health services effectively and efficiently in an ever-changing scenario requires specialists trained in public health. As of date, only one or two States have made it compulsory for a person in a managerial post at the sub-divisional or district or State level to be qualified in public health. The practice as of now is that promotions even to administrative / managerial posts in the field of health are made on the basis of seniority. Often it so happens that a clinician becomes the Director of Health services in the States or even a Director General of Health Services in the Central Government. This leads to a wastage of his / her training in a clinical discipline, while at the same time affecting the ability to manage a programme / health services. There is a shortage of doctors qualified in public health if the requirement of the country is taken into account. Thus, the number of postgraduate seats in PSM / Community Medicine / CHA / DPH / DHA needs to be increased. In fact, for good quality training in the field of public health, what is required is a separate university / school of public health for producing public health specialists of international standards.

The experience of other countries might be useful for the country. In the United States, there are two separate areas for doctors – at the beginning of the training, they can either opt for serving as a clinician or as a programme manager or public health specialist. In the latter case, the student has to complete Masters in Public Health (MPH) and for the former he / she has to undergo residency in hospital. If a clinician intends to take up the assignment of a manager of programmes, he / she has to undertake the MPH course. Similarly, if an MPH intends to serve as a specialist in a clinical discipline, he / she has to undergo residency training in hospitals for patient care.

Against this background, it is clearly understandable that there is a need to rationalise the number of post-graduate seats in different specialities and increase or decrease them as per need depending upon the changing health scenario. For a scientific planning and production of specialists, an agency has to keep

track on the number of specialists registered in different disciplines, keep a live register and also keep a track of their migration within and outside the country. The MCI is the appropriate agency to undertake this task.

24. It is not only the issue of number of teachers / faculty members required for training of undergraduate and post-graduate students in Medical Colleges, but also the time they devote to training of students. In addition to vacancies of teaching faculty, another major hindrance to good quality training of undergraduate and post-graduate medical students is the private practice by doctors recruited as teaching faculty. While the MCI and State / Central governments and most professional bodies have endorsed in the past the need for teachers of medical colleges to be full-time non-practising, this situation is changing rapidly with clandestine or officially sanctioned private practice becoming common place. The logic behind banning private practice was to ensure that medical teachers were available for improving and sustaining the quality of care in teaching hospitals: available for formal and informal training of junior doctors, interns and students. However, this end could not be achieved and the 'teacher's status' is now becoming a status symbol to help the competition in private practice rather than as a vocation of commitment.

Medical Curriculum

25. The medical curriculum is meant to help decide what knowledge needs to be given to the students, what skills the students should have achieved at the end of the training and what methodology needs to be adopted for imparting those skills. At the same time, it is also a known fact that students learn those things and acquire skills in those areas that would be asked in the examination. Thus, the approach of a student is primarily examination oriented - his immediate objective is to clear the exams. As of today, nothing can be labeled as 'out of course' because of grey areas in training and with rapid advances in the field of medicine. Teachers of different specialities compete with one another to overemphasize their own discipline and the latest advances in their own field without keeping in mind that the objective of undergraduate medical education is to produce a 'basic' doctor who can deliver the goods in the community setting. Thus, a medical student is yet again trapped in a dilemma particularly when his role models in the medical college are the super-specialists. Therefore, instead of focusing on community needs depending on local health problems the students have no option but to focus more on recent advances, which are of least relevance to local needs of the population at large.

26. Based on the curriculum, the teachers fail to determine what the students *should know*, what would be *interesting to know* and what the student *need not know*. If this distinction is made there would more of a focus on local health problems along with a focus on social and community orientation to dealing with health problems. Thus, while there is a need to focus on what skills need to be imparted to students, this might not be successful until and unless the examination system is also changed accordingly.

Accrediting Medical Colleges in India

27. It was noted by the Srivastava Committee (1975) that if the system of comprehensive health care services was to be developed properly, it was necessary to restructure the entire programme of medical education as the existing system of medical education did not prepare the right type of personnel needed for a national programme of health services. According to the committee members, the work of the general medical practitioner was not merely treatment of sickness and prevention of disease but also dealing with the social and cultural problems that contributed to the fabric of health. In this regard the system of undergraduate medical education was far from satisfactory.

28. The Srivastava Committee recommended taking immediate steps for setting up, by an Act of Parliament, a Medical and Health Education Commission for coordination and maintenance of standards in health and medical education. It was recommended to be on the lines of the University Grants Commission with a whole-time Chairman who should be a non-official and a leading personality in the field of health services and education. The total membership should be between 9 and 15, one-third representing the Central and State Governments and the universities, one-third representing the various national councils (Indian Nursing Council, Pharmacy Council of India, Dental Council of India) and one-third consisting of leading persons in the field of health and medical education services. Its role was suggested to be promotive and supportive and it should be responsible for planning and implementing the reforms needed in health and medical education. It would be the responsibility of this Commission to start the process of change and then nurse it. However, no action has been taken for establishing such a Commission.

29. The goal of accreditation is to ensure that education provided by institutions of higher education meets acceptable levels of quality. Accrediting agencies, which are private educational associations of regional or national scope, develop evaluation criteria and conduct peer evaluations to assess whether or not those criteria are met. Institutions and / or programs that request an agency's evaluation and that meet an agency's criteria are then "accredited" by that agency. In order to ensure a basic level of quality, the practice of accreditation arose in the United States as a means of conducting non-governmental, peer evaluation of educational institutions and programs. Private educational associations of regional or national scope have adopted criteria reflecting the qualities of a sound educational program and have developed procedures for evaluating institutions or programs to determine whether or not they are operating at basic levels of quality.

30. MCI has played only a limited role of prescribing the regulations for undergraduate and postgraduate education and inspecting the sites to verify on a set checklist the resources to open and continue a Medical College. In the context of the norms available at present, MCI inspectors tend to concentrate primarily on infrastructure and staff position rather than quality / methodology

/ orientation of medical education. Hence even in colleges which have been certified as being recognition worthy on the basis of infrastructure and faculty norms, the quality of medical education has been declining.

Migration

31. Brain drain was estimated to have reached an alarming 30 percent of the annual output in 1986-87 (IAAME, 1992). The migration of doctors - both external (from India to other countries) and internal (from the public sector to the profit oriented private sector) - has shown an increasing trend. In the absence of a regulatory body, which could monitor the migration of doctors, it is difficult to estimate the number of doctors going abroad. Globalization has boosted up this process and a large number of Indian doctors have been migrating abroad. It is good for the economy of the country in terms of their contribution to forex reserve but the type of value system which they contribute to on their return adds to the market economy. This in turn boosts the disillusionment of state on production of doctors with government subsidy. This phenomenon again makes us think to search for an alternative in terms of raising a medical manpower at a lower cost which the State can hold on in strengthening its primary health care.

32. At this juncture, when a number of donor agency managed projects are in operation throughout this country, any conscientitious observer of health system would also like to know the doctors immigrating to India and providing consultancies and work for large scale health management projects. This would also help the government to understand the other areas like health management, health economics, etc. that that need to be addressed and manpower trained accordingly.

Health and Medical Universities

33. University Grants Commission and Prof. Rais Ahmed Committee were appointed by Government of India in 1988 for examining the feasibility / advisability of establishing Medical and Health Universities and how the universities of health / medical sciences should be developed. The Committee observed - "But for a few exceptions, medical colleges are not able to maintain high standards because they frequently lack appropriate facilities, faculty development programmes, a multi-disciplinary approach towards professional development relevant to the socio-economic conditions of our country and vigorous research activity." In the opinion of this Committee there is also clear need for a new kind of educational institution which can adequately discharge its responsibilities by virtue of its funding, scope, structure and academic standing. It may be called a University of Health Sciences.

34. Deemed Universities of medical education in this country came into existence with the establishment of AIIMS in mid-fifties. The other such institutes include JLN PGMER, Pondicherry; PGIMS, Chandigarh; SGIMS&T, Lucknow; Sree

Chitranul IMS&T, Trivendrum; and Nizam's Institute of Medical Sciences, Hyderabad. These are based on principle of *institutes of excellence* and impart specialist postgraduate and super - specialty training. UGC has further indicated following deemed to be universities where MBBS courses are being run during 2003-04:-

Name of Deemed Universities	Intake capacity in MBBS
Manipal Academy of Higher Education, Manipal.*	250
MAHE, Mangalore *	100
Bharti Vidapeeth, Pune	120
Dr. D.Y. Patil Vidyapeeth, Pune	100
Sri Ramchandra Medical College & Research Institute, Chennai.*	150
Amrita Vishwa Vidyapeetham, Coimbatore.	100
SRM Institute of Science and Technology, Chennai	-
Padashree Dr. D.Y. Patil Vidyapeeth, Mumbai.	100
Pavara Institute of Medical Science, Loni, District Ahmednagar.	125
Dr. M.G.R. Educational & Research Institute, Chennai	-
Vinayaka Mission Resarch Institute, Chennai.	100
Bharat Institute of Higher Education & Research, Chennai.	100

* No reservation for SC/ST/OBC Candidates.

35. In an effort to make medical teachers appreciate the basic shift in medical education and draft action plan to bring about needed corrections in the curricula at every level of medical education, a system of establishing separate medical university in each State was started. Andhra Pradesh took the lead in this direction by setting up a Medical University in 1986.

Medical Education in other countries

36. Before establishing its own colleges, students from Nepal were being sent to other counties for undergraduate medical studies. Many students thus trained never returned to their country; most of those who returned could not function effectively in the national health service. Institute of Medicine, Kathmandu was started in 1978 with the objective of producing doctors with adequate skill, knowledge and attitude to function in the socio-cultural environment existing in Nepal as the country needed doctors who could institute life-saving measures in difficult areas, organize preventive health services and could train the auxiliaries in the health team. Thus to begin with only middle level workers already functioning at least for three years as part of the health care system were admitted in the medical school. Besides integrated teaching of anatomy, physiology, pathology and clinical aspects, a strong orientation on community needs was given. Such a well thought out system could not sustain itself on long term basis due to lack of right kind of faculty mix. Today, Nepal is on the line of many other developing countries with the presence of a private medical college.

37. England possesses the oldest and ever changeable model of medical education in the world. The General Medical Council (GMC), which governs the system of developing the doctors and regulates the practice of medicine there, set up

an Education Committee in 1983. It observed that overlapping of skills and responsibilities while not diminishing the distinctive role of doctors calls for mutual respect and understanding the need for teamwork that should begin to develop during the undergraduate years. GMC is also conscious of ageing multi racial society of England facing the change in the pattern of disease and disability eventually requiring change in curriculum. It has firmly reinstated public health as a priority and increased the space for it in undergraduate education.

Internship

38. The undergraduate medical education in India has a length of nine semesters - teaching of six month each - followed by twelve months internship. During internship the young doctors are supposed to enhance their skills and understand the mechanism of health care delivery in the public system. It is for this reason the internship is called as compulsory rotatory housemanship. The interns are expected to contribute to the needed clerical work in the wards, theatres and peripheral facilities. It is on this assumption that they are paid honoraria by state governments of approximately Rs. 2500/- per month. The unfortunate part of internship is that it is implemented only on papers. Ever since various universities started the Pre-PG (MD / MS) entrance examination, internship has become redundant. A medical graduate throughout his internship prepares for PG Entrance Examination. It is estimated that 20,000 doctors doing their internship throughout this country as in 2004 are paid an honoraria of Rs. five crore per month from state ex-chequer. Although seriousness of this phenomena has been expressed from many corners but no concrete action has been taken to make this period productive.

Quite a few of those doctors who fail to qualify in the PG Entrance Examination join services as general duty Medical Officers in the public sector and are mostly posted at a Primary Health Centre which is an exclusively new atmosphere for him / her because of lack of reasonable exposure to such a setting during internship. Thus the doctor, because of his / her orientation towards curative services, focuses mainly on treatment of disease, without focusing on the preventive and promotive work that is also expected of him / her. One reason for the doctor opting to join services with the State Government in a rural setting is that it simply provides an opportunity to join post graduation after serving in rural area for a few years.

Post graduation

39. The trend for post graduation has acutely risen. It is estimated that almost half of the medical graduates opt for post-graduation. There is no questioning the fact that postgraduates concentrate themselves in urban areas. So serious is the problem that large scale health projects currently being implemented in different States have failed to ensure availability of anesthetists, obstetricians and surgeons for effective delivery of Emergency Obstetric Care services including newborn care.

40. Postgraduate medical education is regulated by MCI through a nine-member committee. It is only in October 2000, the MCI has specified the goals of postgraduate medical education in its new regulations. Largely these goals focus on producing specialists who have mastered most of the competencies of concerned specialty required at secondary level of health care delivery system. MCI has stressed that communication skills and research methodology should be the mandatory component of PG curricula. The departments conducting postgraduate program are recognized on the basis of bed strength (60 beds for General Medicine/ Surgery/ Ob-Gynae and 30 beds for other specialties); a student teacher ratio of 1:1 and follow up of a detailed syllabus.

41. Medical Council of India does not maintain information on the number of postgraduates (Degree / Diploma / M.Sc. (Non-Medical)) registered in different specialities in the country with various State Medical Councils. Thus, an analysis in this regard for the whole country was not possible in such a short period of time. As a case study, information was collected from Rajasthan Medical Council on the number of specialists registered with it. The first post-graduate degree was registered with Rajasthan Medical Council in 1961 and since then over 6,500 postgraduates (MD / MS / Diploma holders / M.Sc. (Non-Medical) / DNB) and super-specialists (DM / M.Ch.) have been registered with the Council. The speciality-wise number of specialists registered with Rajasthan Medical Council is shown in Annexure I.

Service Conditions of Doctors

42. The doctors in the government are generally inducted between 23 and 28 years of age. In almost all States the age of superannuation is 60 years. Therefore, a doctor serves the public system for about 30 to 35 years. All the clinical assignments expect him to be available round the clock for patient care. More often than not the doctor attends to patients at odd hours and is always expected to be in time in the routine hours. Absence of public servants (including medical personnel) from their jobs has been long discussed as an impediment to effective public service delivery. In a recent study it was shown that the absence rates of health care providers (doctors, nurses and other paramedical staff) ranged from 23 to 40% across different developing countries (23% in Peru, 35% in Bangladesh, 37% in Uganda, and 40% in India and Indonesia). Another study conducted in rural Udaipur also showed absence of 45% of health care providers at subcentres and aid posts, and 36% absence in PHCs and CHCs. One major factor that contributed to the absence of medical personnel at the facility was the lack of living quarters.

43. The salary structure of doctors is always *at par* with officers in the state civil services, with a minimal additional allowance for rural / difficult area posting. In some of the positions non-practicing allowance is paid. The private sector is quite attractive to the doctors whether in the teaching profession or otherwise. The public sector cannot match the salaries of the private sector, because of the elasticity of the private sector. Hence, the public sector, in order to retain talent, must focus more on non-financial incentives like housing, placement,

recognition, career progression, etc. There have been incidents wherein the post of regular Director of Health Services in some States has been vacant since many years, and only ad-hoc arrangements have been made for filling up this post from time to time. This clearly affects the motivation and morale of the top level managers, and in such situations they cannot be expected to improve the motivation and provide good leadership to the large workforce in health and family welfare sector.

In most States doctors are comparatively underprivileged when they are compared with their counterpart officers in administrative, police land accounts services. The latter always have earmarked houses, telephones, vehicles, orderlies and other privileges. Although in criticism of health care delivery doctor remains in the center but the fact is that not even ten percent of the doctors in the peripheral health facilities are provided mobility, whereas when the concept of primary health care was mooted, provision of a vehicle was made for every Primary Health Centre. Right now even many Community Health Centres of most States do not have a vehicle which also seriously affects their mobility.

Quite a large number of subcentres, PHCs and CHCs do not have houses for doctors or paramedical staff and even if staff quarters are available, the housing condition in majority cases is not good, with no supply of water, electricity and with leaking roofs and broken windows, etc. At this juncture it is important to note that most Medical Colleges, whether private or in the public sector, are located in and around urban areas. An undergraduate medical student studies in this environment for five and a half years with minimal exposure to a rural or community setting during this training; he / she is thus aloof of the conditions prevailing in remote and rural areas. If he is to join services in a rural setting with poor infrastructure - poor staff quarters, no or erratic water supply and erratic electricity supply it might easily be understandable that the doctor might not stay in such conditions. This gets further evidenced by the fact that many ANMs and school teachers also do not stay at the headquarters of their posting, especially when the infrastructure is poor.

There is a need for continuous development of a doctor - technically, managerially and socially - ever since he / she joins service with any State government. He / she tries to cater to the needs of the patients as per his capacities and is expected to refer cases that he / she cannot manage to higher centres. For credibility in the society, the PHC should be backed up by a properly functional CHC or District Hospital where the referred patient gets priority. Hence, there is also a need to develop a functional referral system, without which the primary health care services might not improve.

44. Above all the promotional avenues for doctors are limited. It is only in limited States that a time-bound promotion system exists. In many States (Orissa, Bihar, Uttar Pradesh, Rajasthan to name a few) a Medical Officer might get the first promotion after 15-20 year's of service. There are many doctors who continue to remain Medical Officers without a promotion while the officers in civil services

who joined with them might have risen from the post of an SDM to Special Secretary or even Secretary and from Accounts Officer to Financial Advisor. These conditions largely reflect the reasons for low morale of the doctors. The promotion policy for doctors should be such that once a doctor joins services at a PHC, he / she moves to the sub-divisional headquarters within some years, to district headquarters within the next few years, etc. There is, therefore, a serious need of reviewing the role of doctor vis-à-vis pay and perks paid to keep up their morale.

45. Transfers is another issue which is responsible for the low morale of doctors. Some States do have a transfer policy, but it is rarely adhered to. As with any other government employee, a Medical Officer can be transferred to any corner in the State. And as of today, transfers cannot be predicted and can take place at any moment even without reason. This poses a lot of problems especially in large States. These days, when the transfers are being effected, one can very well observe the thousands and lakhs of government employees of various departments flocking the Secretariats of the states trying to get themselves transferred. This has been due to the increasing political interference in the working of health department, as with all other departments. If a simple graduate Medical Officer can manipulate through political links, he / she can be placed even at the tertiary care hospital (attached with medical college) while at the same time a post-graduate (degree or diploma holder) might be posted at a PHC if he / she is not politically manipulative. Instances have been found where shortage of Anesthetists has been realised, while a few qualified anesthetists are posted at the PHCs. On the one hand, one transfer dislocates two families (or sometimes just one) and on the other hand it leads to drain of resources from the state exchequer in an already starved economy.

One competitive advantage of practitioners of traditional systems of medicine (or even quacks) is that is their continuous availability and regular interaction with the community. This is where the modern system loses out to traditional system of medicine. In an era of increasing political interference and due to very frequent transfers, the delivery of health services in remote areas is adversely affected. With such frequent transfers it is not possible to develop a close rapport and link with the community being served. There is evidence that in some CHCs Caesarean Sections were being performed, and with transfer, the number of these operations came to nil. While affecting the services, the motivation and morale of the service providers is also adversely affected.

With numerous bilateral and international funding agencies entering the area of health and family welfare services, and each of them having their own priority areas and agenda, there has been a tendency of vertical programmes in selected areas. The kinds of interventions vary from area to area depending upon the funding agency and its programme priorities. With frequent transfers, doctors getting transferred from one area to another are caught unawares of the varying interventions, thereby contributing to their remaining aloof. There have been instances in Rajasthan, for example, wherein projects for strengthening

Emergency Obstetric Care (EmOC) services were being implemented in one-third of the districts and health facilities for strengthening EmOC services were identified, and doctors trained in EmOC. Within a few months the trained doctors were transferred from these facilities to other facilities. Similarly, Sector Investment Programme was being implemented in some districts, and a few doctors were sent for a 12-weeks' training in public health to National Health and Family Welfare. These doctors were expected to serve in these districts at district or sub-district levels for improvement of health. But within a few months a doctor was transferred to a non-field position in a dispensary, thereby rendering the training futile. Thus, there is a need for a rational transfer policy to operate in the context of a sector-wide approach, and there is a need to move away from verticalised programme interventions to horizontal integrated systems.

46. Due to financial constraints, most States have now stopped recruiting Medical Officers in regular pay scales and instead are now offering contractual services for as less as Rs. 8000.00 per month. This kind of an approach is bound to have a high turnover with doctors joining services only for getting rural field service experience so that they can get some kind of reservation in Postgraduate Entrance Examination, or as a makeshift service for preparing for PG Entrance Exams, or joining service and just lingering on to it in the hope that one fine day their services might get regularised. It is easily understandable that the basic purpose of posting these doctors to rural settings with this approach will not be beneficial for the community which will continue to be deprived of basic / primary health care services near their homes.

Recommendations

47. Paradigm shift towards fee-for-service mode of operation in India is often quoted as *private medicine-state supported!* Such a system may well suit the educated middle class when they suffer from illnesses of relatively short duration of less than catastrophic proportion. But the challenge for various state governments in India is to satisfy the needs of large number of families who live below the poverty line. The cost incurred in preparing MBBS doctors to manage the increasing number of primary health centers for the state is certainly very high. Eventually a venture to place a relatively less qualified person at the peripheral facilities delivering primary health care would always have more pros then cons.

48. The country is heading to a point where private medical colleges may outnumber government colleges (already in 2004 there are 104 in private sector against 125 of the government sector). There is no doubt that the products of private medical colleges will add to the escalating cost of health care. In this background the present paper places following recommendations for the consideration of all concerned to facelift medical education in India:

    a. The government should invest in undergraduate education of only those doctors who are prepared to work exclusively in public system for first ten years after their graduation.

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b. The Medical Council of India should maintain live registers of graduate and (speciality-wise) post-graduate medical students registered in the country. As suggested by earlier committees, this could begin with a Census of all medical professionals concerned. This would help in planning and production of the appropriate mix of medical professionals in the country based on the needs keeping in mind the demographic and epidemiological transition.

c. To use the physician's time in an efficient manner, more and more non-physicians need to be used to provide primary health care.

d. There is a need to recruit only those medical doctors as teachers who have the aptitude for teaching and training. The regulatory system to evaluate the competence of medical teachers on the basis of their contribution to teaching, research and service delivery on periodic basis (not more than five years) is introduced with seriousness. Sufficient incentives are introduced for attracting medical teachers to stay on in pre- and para-clinical subjects. While giving due attention to financial incentives, a number of non-financial incentives would be desirable (like rational transfer policy, transparent promotion policy, career progression, etc.). As recommended by earlier committees, medical teachers should be working full-time as teachers continuously striving to improve teaching and training standards for the benefit of medical students.

e. A system of accreditation of medical colleges should be introduced, with almost 45% of medical colleges in the private sector.

f. As recommended by Srivastave Committee, for improving the quality of medical education, a Health and Medical Education Commission should be established on the pattern of University Grants commission.

g. Service conditions of doctors at lower level in the hierarchy of medical establishments should be improved so as to build a productive morale.

h. Capacity development of doctors working at peripheral health facilities through frequent in-service trainings and CME should be promoted.

i. There must be a gap of at least three years between acquiring MBBS and seeking admission in a postgraduate course.

j. Training in super-specialities should not be conducted in an institute where undergraduate medical education is imparted.

k. There should be no subsidy on postgraduate and particularly super-speciality education. The number of post-graduate seats in some disciplines like anesthesia, ophthalmology, public health, etc. need to be increased in medical colleges.

l. Appropriate tuition fee be charged in all Government Institution from all medical post-graduates.

m. A proper referral mechanism would yield more value for the investment made in medical education.

49. There is a vast resource of health manpower available in the country in the form of practitioners of indigenous systems of medicine. This resource needs to be tapped and integration of service provision with this group of health manpower needs to be increased. This integration has to be a functional integration at all levels – from training to service provision. An attempt in this direction has already been made by placing ayurvedic and homoeopathic doctors in the same facility as allopathic doctors.

50. Medical education should not be subsidized for those doctors who would be of no use to the public system especially in the context of primary health care. It should be seen in the dual perspective of confirming the capacity of state system to absorb doctors and doctor's own compulsions to join private sector.

Acknowledgement

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Annexure - 1

Estimates of health manpower across different countries (Rate per 1,00,000 population per year)

Name of country	Physicians		Nurses		Nurse : Doctor Ratio
	Rate per 100000	Reference year	Rate per 100000	Reference year	
Australia	240.0	1998	830.0	1998	3.5
Canada	229.1	1995	897.1	1996	3.9
China	161.7	1998	98.6	1998	0.6
Cuba	530.4	1997	677.6	1997	1.3
India	48.0	1992	45.0	1992	0.9
Sri Lanka	36.5	1999	102.7	1999	2.8
Thailand	24.0	1995	87.0	1995	3.6
United kingdom	164.0	1993	497.0	1989	3.0
United States of America	279.0	1995	972.0	1996	3.5

Source: WHO website

Annexure - 2

Specialists Registered in Rajasthan

(between 1961 and 2004)

Discipline	Degree/ Diploma	Number
Anatomy	MS M.Sc.	41 2
Physiology	MD. M.Sc.	26 4
Pathology	M.D.	155
Pharmacology	M.D.	32
Forensic Med.	M.D.	9
Preventive & Social Medicine	M.D. D.P.H.	66 38
General Medicine	M.D.	1314
General Surgery	M.S.	1120
Pediatrics	M.D. DCH	525 331
TB & Chest Dis.	M.D. DTCD	116 56
Skin & VD	M.D. DDVD	77 24
Psychiatry	M.D. D.P.M.	78 15
Orthopedics	M.S. Dipl. Orth.	366 4
ENT	M.S. D.L.O.	220 3
Ophthalmology	M.S. D.Ophth	422 13
Ob Gynae	M.S. DGO	869 127
Radio Diag.	M.D. D.M.R.D.	147 62
Anaesthesia	M.D. D.A.	417 75

Source: Rajasthan Medical Council, 2004

Annexure -3

STATE WISE NUMBER OF MEDICAL COLLEGES IN INDIA

(AS ON 30.7.2004)

S. No.	Name of the State	Number of Medical Colleges		Total	Total Number of seats
		Govt.	Private		
1.	Andhra Pradesh	10	17	27	3475
2.	Assam	3	-	3	391
3.	Bihar	6	2	8	510
4.	Chandigharh	1	-	1	50
5.	Chhatisgarh	2	-	2	200
6.	Delhi	5	-	-	560
7.	Goa	1	-	-	100
8.	Gujarat	8	5	13	1625
9.	Haryana	1	2	3	250
10.	Himachal Pradesh	2	-	2	115
11.	Jammu & Kashmir	3	1	4	350
12.	Jharkhand	3	-	3	190
13.	Karnataka	4	27	31	3905
14.	Kerala	6	8	14	1600
15.	Madhya Pradesh	5	2	7	820
16.	Maharashtra	19	19	38	4200
17.	Manipur	1	-	1	100
18.	Orissa	3	-	3	364
19.	Pondicherry	1	4	5	475
20.	Punjab	3	3	6	520
21.	Rajasthan	6	2	8	800
22.	Sikkim	1	-	1	100
23.	Tamilnadu	13	7	20	2315
24.	Uttar Pradesh	9	3	12	1262
25.	Uttaranchal	-	2	2	200
26.	West Bengal	9	-	9	1105
	Total	**125**	**104**	**229**	**25,682**

Source: MCI, India

Annexure 4

STATEWISE NUMBER OF DOCTORS (ALLOPATHIC & AYUSH) REGISTERED

S. No.	State / U.T.	No. of Allopathic doctors registered till 30.9.2004	No. of AYUSH doctors registered till 1.1.2002	Total no. Of registered doctors
1.	Andhra Pradesh	29238	48402	77640
2.	Arunachal Pradesh	0	0	0
3.	Assam	1284	15723	17007
4.	Bihar	161010	34975	195985
5.	Chhattisgarh	0	186	186
6.	Goa	0	2332	2332
7.	Gujarat	22425	36521	58946
8.	Harayana	26047	1285	27332
9.	Himachal Pradesh	8466	0	8466
10.	Jammu & Kashmir	505	7993	8498
11.	Jharkhand	0	135	135
12.	Karnataka	18792	65789	84581
13.	Kerala	22968	32412	55380
14.	Madhya Pradesh	56009	28817	84826
15.	Manipur	0	0	0
16.	Maharasthra	83167	90855	174022
17.	Meghalaya	229	0	229
18.	Mizoram	0	0	0
19.	Nagaland	1997	0	1997
20.	Orissa	8781	14712	23493
21.	Punjab	33542	33705	67247
22.	Rajasthan	29261	22506	51767
23.	Sikkim	0	0	0
24.	Tamil Nadu	37053	71157	108210
25.	Tripura	0	0	0
26.	Uttaranchal	0	0	0
27.	Uttar Pradesh	94898	44927	139825
28.	West Bengal	45280	52274	97554
29.	A&N Island	0	0	0
30.	Chandigarh	297	0	297
31.	D&N Haveli	0	0	0
32.	Daman & Diu	0	0	0
33.	Delhi	10221	28402	38623
34.	Lakshadweep	0	0	0
35.	Pondicherry	0	0	0
	TOTAL	691470	633108	1324578

Source : MHFW, GOI, 2004

References

Reports from Government of India:

1. Report on **Health Survey and Development Committee;** (Bhore Committee) Govt. of India, New Delhi, 1946.
2. Report on **Health Planning and Development Committee,** (Mudaliar Committee), Govt. of India, New Delhi, 1961.
3. Report of the **Medical Education Review Committee**; (Shanti Lal J. Mehta Committee). Govt. of India, New Delhi, 1982.
4. Report on **Job Responsibilities of staff of Primary Health Center** by Rural Health Division, MOHFW, GOI, New Delhi, 1986.
5. Report of expert committee on **Health Manpower planning, Production and Management** (J S Bajaj committee) MOHFW, GOI, New Delhi, 1987.
6. Report on **Medical Education and Support Manpower;** (Srivastava Committee) Govt. of India, New Delhi, 1975.
7. Report on **National Policy on ISM & Homeopathy – 2002 and National Health Policy – 2002 :** MHFW, New Delhi 2002.
8. Report on **Mainstreaming of ISM&H and Integration of different medical system :** AYUSH, MHFW, GOI, New Delhi, June 2004.

Others :

1. Alwan A, Hornby P: **The implications of health sector reforms for HRD**; Bulletin WHO 2002, 80-56-60.
2. Adkoli BV: **Personal Communication** (2004).
3. **Annual Report of MCI, 2002-03,** New Delhi
4. Buchan J and Dal Poz Mr. : **Skill mix in the health care**: reviewing the evidence in WHO bulletin 80: 575-580, 2004.
5. Chaudhary N, Hammer J; Ragers. H and Mulidharan K. : Teacher Health Care Provider Absence – A multi-country study by DFID at E:\PS\PS Website (2001-2004) Absenteeism 2004.
6. Dhruv Mankad, M (Editor): **Medical Education : Reexamined;** CED, Mumbai, 1991.
7. ICSSR and ICMR: **Health for All – an Alternative Strategy:;** IIE, Pune, 1981.
8. **Inquiry Driven Strategies for Innovations in Medical Education in India:** Consortium of Medical Institution, AIIMS, New Delhi. 1991.
9. **The Independent Commission on Health In India :** VHAI, New Delhi, 1997.
10. India Today: **Best Medical Colleges of India,** May 17, 2004.
11. India Today : **Educational Casualty;** July 26,2004.
12. Kat2 F.M. & Fulop T, **Personnel for Health Care- Case studies of Educational Program:** Public Health Paper 71, WHO, Geneva, 1980.
13. Kat2 F.M. & Snow R: **Assessing Health Workers Performance-A manual for training and supervision** Public Health Paper 72; WHO, Geneva, 1980.
14. Kothari L.K.: **Medical Education** SIHFW Rajasthan TRS No.02, 2005
15. Lele D and Pai MR: **Doctors, Patients and Consumers Protection Act** by Rotary Club of Bombay, Bombay, 1993.

16. Marchal B., Kegels G: **Health Workforce imbalances in times of globalization.**
17. **Websites of different Medical Institutions** of India MHFW, GOI and MCI 2004.
18. McIntosh N.: **Medical Education for the 1990's and beyond: An Approach to clinical training;** paper presented in MCI convention on *Need Based Medical Education* at New Delhi: on 25.08.1992.
19. Mathur Shiv Chandra : **Swasthya Karmi Module and Coordinator's Module;** HCM RIPA, Jaipur, 1995.
20. Mathur S.C. & Mathur B.N.: **Role of General Practitioners in delivery of F.W. Services,** Curr.Med.Practice.51:21-22,1981.
21. Mishra R, Chatterjee R and Sujatha Rao : **India Health Report,** Oxford, New Delhi, 2003.
22. ***Mitanin* Program – Conceptual issues and operational Guidelines :** SHRC, Raipur, 2003.
23. Narsimhan V.et al : **Responding to global human resource crisis,** Lancet 2004; 363: 1469-1472.
24. Pai Sanjay: Review on ***Munnabhai MBBS;*** BMJ 328, April 2004.
25. Ramamurthy B : **Unfolding Standards of Medical Education** Paper presented on International Symposium or Medical Education at New Delhi; 28 August 1992.
26. Sood R (Ed) : **Post graduate Training in Medicine – Key issues** (Technical series) API, New Delhi, 2002.
27. Sharma R: **Expectations of health services from graduate medical education;** Ind Jou Med Ed 20, 1982.
28. Shiv Chandra & Jain T.P.: **Teaching of Preventive and Social Medicine: A Model;** Ind. Jour. Med. Ed. 17:1-7,1979.
29. Shiv Chandra : **Rural Internship: Facts & Factors,** MFC Bulletin, 44, 1979.
30. Shiv Chandra & Mathur G.M.: **Health Care through Mobile Camps, W.H. Forum,** 6:153-154, 1985.
31. Shiv Chandra : Letter to Editor on Four Decades of W.H.O. World Health Forum, 9:76(1988).
32. Suryanaraiyana Lingam: **University of Health Science** University News, XXVII, November 1989.
33. WHO: **Increasing the relevance of Education for Health Professionals;** TRS no. 838, WHO, Geneva, 1993.
34. WHO: **Macroeconomics and Health: Investing in Health for Economic Development**: WHO, Geneva, 2001.
35. VHAI: **State of India's Health;** New Delhi 1991.
36. Yamey G.: Interview of Ron LaPorte in News column; **BMJ,** 328:1158; 15 May 2004.
37. Strategies for **Social Relevance and Committee orientation in Medical Education.** building on the Indian experience; *Step by Step;* Community Health Cell, Bangalore, 1992.

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